

1 **Ten considerations for effectively managing the COVID-19 transition**

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69 **Abstract**

70 Governments around the world have implemented measures to manage the transmission of coronavirus
71 disease 2019 (COVID-19). While the majority of these measures are proving effective, they have a high
72 social and economic cost, and response strategies are being adjusted. The World Health Organization
73 (WHO) recommends that communities should have a voice, be informed and engaged and participate in
74 this transition phase. We propose ten considerations to support this principle: (1) implement a phased
75 approach to a ‘new normal’; (2) balance individual rights with the social good; (3) prioritise people at
76 highest risk of negative consequences; (4) provide special support for healthcare workers and care staff;
77 (5) build, strengthen and maintain trust; (6) enlist existing social norms and foster healthy new norms; (7)
78 increase resilience and self-efficacy; (8) use of clear and positive language; (9) anticipate and manage
79 misinformation and (10) engage with media outlets. The transition phase should also be informed by real-
80 time data according to which governmental responses should be updated.

81 The rapid escalation and global spread of coronavirus disease 2019 (COVID-19) has prompted
82 governments to implement policies and measures to manage virus transmission, which has given health
83 systems time to prepare and mitigate the impact of the pandemic. While the majority of these measures
84 are proving effective, they have a high social, psychological¹ and economic cost and are, therefore, not
85 sustainable. Some countries and smaller jurisdictions are entering a phase of transition during which a
86 ‘de-escalation of global actions may occur, and reduction in response activities or movement towards
87 recovery actions by countries may be appropriate, according to their own risk assessments’² (p. 14). This
88 transition has challenges. Until a vaccine or effective treatment becomes available, public behaviour and
89 adherence to national and sub-national response strategies—notably social and physical distancing
90 measures (SPDM)—will continue to be key measures for controlling the virus. One of the six key criteria
91 that the World Health Organization (WHO) Regional Office for Europe³ have defined for the transition is
92 that communities should have a voice and be aware of and engaged in the transition process. We aim to
93 support this principle with available evidence and expert advice. Note that due to the available research
94 and experts involved in this work, the steps may be biased towards high-income, well-resourced
95 countries. Applying them to other contexts may need additional adaptation.

96

97 **Unwanted scenarios**

98 At worst, a poorly timed and badly managed transition threatens the gains that each nation has
99 collectively achieved—potentially with high social and economic costs⁴. Historical evidence from the
100 1918 influenza pandemic shows that a second wave of infection can follow the removal of SPDM and
101 lockdowns^{5,6}. Each country’s government can apply lessons learnt from experience and analyse the
102 current situation to anticipate potential unwanted scenarios and plan mitigation measures. These scenarios
103 are likely to vary depending on cultural context. However, in general, the following scenarios and
104 situations would be helpful to consider.

105

106 *A continuum of reactions*

107 While there is no empirical evidence for a ‘continuum’, one may imagine a potential continuum of public
108 responses to the pandemic. On one end may be a potential decline in feelings of fear and threat. Research
109 reported in a non-peer-reviewed preprint found that a lack of perceived risk (e.g. due to declining cases or
110 psychological adjustment to the new situation) can cause decreased adherence to measures⁷ such as
111 SPDM. Moreover, people’s desire to reduce loneliness as soon as possible after a period of prolonged
112 enforced isolation may be strong: research reported in a non-peer-reviewed preprint suggests that the
113 loosening of response measures might seem like standing in front of a rich buffet after a diet or period of
114 fasting⁸. Just as we might be tempted to binge eat, our craving to socialise may grow with each day of the

115 pandemic. At the other end of the continuum of reactions, distrust of authorities, conspiracy thinking or
116 reactance (anger due to restrictions) may lead to social movements against SPDM norms and policies and
117 a rise in pro-social closeness and interaction. These reactions may be underpinned by messages that
118 question the appropriateness of government pandemic measures, which can increase distrust among
119 broader segments of the population. This scenario is not dissimilar to events and patterns related to
120 vaccination⁹⁻¹¹. In addition, specific population groups may lack the capability to continue adhering to
121 restrictions and recommendations. These groups may include youth, people with anxiety and other mental
122 health disorders, people who lack social support structures, financially disadvantaged groups, the
123 homeless, indigenous populations, mobile populations, people with chronic illness, people experiencing
124 abuse or domestic violence, people living in long-term care facilities and the persons who care for them
125 and healthcare workers. People with lower health literacy may face additional difficulties when
126 navigating these challenges¹². Conversely, some people may be overly cautious due to fear and worry¹³
127 and may continue to over-implement restrictions¹⁴, avoid supportive social interactions and delay seeing
128 health care providers for potentially life-saving measures, such as vaccinations or check-ups.

129

130 ***Uncertainty and lack of clarity***

131 As response strategies are continuously adjusted, it is likely that debates in the political and public
132 spheres related to unresolved dilemmas or the appropriateness of the implemented measures will increase.
133 How measures are implemented can fluctuate between cultures characterized by societal tightness (e.g.
134 having strict rules and punishing deviance) versus societal looseness (e.g. having more permissive rules
135 and lax punishments)¹⁵. Moreover, the transition process is likely to be bidirectional and to require
136 continuous adjustment³, and predictability will be challenging due to uncertainty regarding the evolution
137 of the outbreak. People will need to navigate these adjustments and the lack of predictability, as well as
138 complex and ambiguous messages (e.g. see some friends but not too many friends) and possibly
139 competing demands from the social and cultural environment regarding social interaction^{16,17}.
140 Collectively, these situations may result in individuals developing idiosyncratic interpretations of
141 restrictions as a coping strategy¹⁸.

142

143 ***Stigma and discrimination***

144 Disease can evoke fear and motivate people to separate themselves from infected individuals by
145 stigmatising them¹⁹⁻²¹. Examples include the stigmatization of gay men as an early response to AIDS²²
146 and of ‘Typhoid Mary’ (Mary Mallon) in the early twentieth century. The latter was apprehended by
147 authorities in Manhattan for spreading typhoid via her work as a cook, which caused many deaths²¹. In the
148 current situation, certain population groups (e.g. health workers or certain ethnic groups) in some

149 countries may be perceived and branded as virus transmitters^{23,24}. COVID-19 may also become associated
150 with unhygienic or careless practices. This thinking could increase the mental distress and anxiety of
151 people who are infected²⁵ (preprint without peer-review) and reduce compliance with regard to testing
152 and engaging in the contact tracing process²⁶. Moreover, individuals who are at higher risk of severe
153 illness (and their families) may be advised to continue strict compliance with restrictions (e.g. working
154 from home). These individuals may be exposed to new forms of stigma, blame or discrimination as
155 societal expectations shift, especially in contexts where legal terminology is unclear.

156

157 **Ten considerations**

158 Avoiding these potential unwanted scenarios calls for careful planning and consideration of the
159 perspectives and engagement of populations³ and should be informed by evidence and expert advice from
160 the social and behavioural sciences and medical humanities. To support a key WHO criterion for the
161 transition (that communities should have a voice, be informed, engaged and participate), we propose ten
162 considerations for governments (Figure 1).

163

164 To gather existing evidence and experiences of previous crises and brainstorm how this information could
165 support the transition phase, KBH and CB convened a group of experts, who reflect a diversity of
166 academic disciplines, domain expertise and familiarity with infectious diseases in general and COVID-19
167 in particular. This brainstorming was conducted online over three days. The first authors synthesised the
168 longlist of relevant issues into a shortlist, which was commented on by the full group in a shared
169 document. When a consensus was reached regarding the number of considerations and their respective
170 scope, the first authors drafted the sections and the experts added evidence and relevant references. The
171 entire group reviewed the final version. Thus, the resulting ten considerations, which are presented in
172 Figure 1 and explained with examples in Table 1, are based on expert advice and available evidence.

173

174 Consideration 1 relates to the central idea that communities must be aware that there will be no going
175 back to normal but a stepwise approach to a ‘new normal’. The other nine considerations relate to giving
176 communities a voice (Considerations 2 to 4), engaging them in the transition (Considerations 5 to 7) and
177 informing them (Considerations 8 to 10)³. These considerations are intended to support authorities in
178 tailoring response strategies that will be accepted by the population and priority target groups and that are
179 likely to be effective^{3,9,27,28}.

180

181

182 We suggest that, where possible, each consideration be monitored, informed and qualified using real-time
183 empirical evidence. This could be achieved via population surveys²⁹, media and social media monitoring,
184 ethnographic studies, COVID-19 hotline monitoring and rapid assessment of specific population groups.
185 While the following considerations have been devised for COVID-19, they may also be helpful for
186 addressing future unexpected events.

187

188 **Consideration 1**

189 ***Implement a phased approach to a new normal***

190 At the centre of transition management is the assumption that an immediate return to normal will not be
191 possible. Instead, the transition process will take place in accordance with a phased approach whereby
192 society, systems and services are gradually re-opened, potentially in new forms. Each phase may involve
193 adjustments to restrictions and potential re-employment of previous stricter measures. During this
194 complex process, if people think that they are or soon will be returning to normal, their actions may
195 hasten the onset of a second wave of the outbreak⁴. Empirical evidence on how to mitigate this and
196 maximise the effectiveness of a phased approach to a new normal can be gained from studies that
197 investigate how people acquire new habits. These include studies on adjusting social norms in new
198 student populations^{30,31}, evaluating procedures and aids for prisoners returning to society³², developing
199 pedagogical steps for small children who learn to stay in kindergarten³³ and normalising behaviours for
200 people with eating disorders³⁴. Different as they are, these studies all employ a step-by-step approach to
201 practising new behaviours in old environments whereby successfully acquiring habits is a function of
202 repetition³⁵⁻³⁷. In each case, the transition process is iterative. It involves detailed planning, setting goals
203 for each stage and stabilising, recapping and monitoring progress³⁶ and is underpinned by clear
204 communication. The COVID-19 transition process involves defining and communicating specific phases
205 in advance, while also accounting for the uncertainty of the outbreak evolution; preparing people for
206 planned adjustments to the response strategy; and transparently communicating what is known, what is
207 not known, and the criteria applied when making decisions.

208

209 **Consideration 2**

210 ***Balance individual rights with the social good***

211 The pandemic has prompted governments to temporarily introduce restrictions that infringe on individual
212 rights, such as freedom of movement, freedom of assembly and the right to practise religion in groups.
213 Public health approaches are often utilitarian in essence, which means that they maximise the overall
214 benefit for the population³⁸. Willingness to act for the benefit of society is subject to cultural differences
215 and is more prominent in collectivist countries than in individualistic countries, where maximising

216 individual benefit is prioritised³⁹. These differences can also affect the level of acceptance of measures
217 and make it difficult to predict acceptance of a strategy in multiple regions or countries (e.g. wearing
218 masks to protect others may be well accepted in some Asian countries, but this does not necessarily
219 predict high willingness to wear masks in European countries). Difficult questions can also arise
220 regarding how to balance utilitarian values conducive to public health with respect for individual rights,
221 equity and personal dignity. For example, in certain limited cases, involuntary quarantine might be a
222 legitimate public health option⁴⁰⁻⁴². However, efforts to protect public health should respect fundamental
223 rights, such as freedom of speech, privacy, due process of law, freedom from discrimination and freedom
224 of religion. Restrictions that are not regarded as justified may also jeopardise public support for the
225 pandemic response strategy and trust in authorities⁴³. Challenging cases, such as people exercising
226 freedom of speech to spread falsehoods that harm public health, may arise. Responses to these challenges
227 may vary from country to country. However, in general, the continued adjustment of the response
228 strategy, including decisions on which measures to adjust, lift or re-employ, should be maximally
229 respectful of rights and the foundational interest of human dignity
230 (<https://www.thehastingscenter.org/briefingbook/pandemic/>). Empirical evidence can inform this
231 decision-making by enabling authorities to understand norms and values, ensure the acceptability of
232 implemented and planned measures with respect to both individual and societal gains and detect shifts in
233 acceptance or barriers to measures^{29,44}.

234

235 **Consideration 3**

236 ***Prioritise people at highest risk of negative consequences***

237 The greatest negative impact of COVID-19 is felt amongst people who experience disadvantage,
238 especially poor and underserved groups⁴⁵ (see also
239 <https://www.un.org/development/desa/dspd/2020/04/social-impact-of-covid-19>). Evidence from other
240 infectious disease contexts shows that socio-economic, equality-related disadvantages increase the risk of
241 negative psychological, mental and physical health, social, and economic consequences⁴⁶⁻⁴⁸. It is
242 reasonable to assume that groups who suffer these consequences will also encounter difficulties in
243 adhering to recommended behaviours in the long term. Therefore, mitigating the negative consequences
244 for these groups will result in individual as well as collective gain. Surveys and rapid assessments can
245 help identify priority groups who are likely to suffer the most. National response strategies could consider
246 basic needs, such as access to food, safe housing, health care, social care and employment and an
247 understanding and acknowledgement of the barriers faced by these different groups. Structural
248 interventions can help support recommended behaviours^{47,49,50}. For instance, unpublished research
249 reported in a non-peer reviewed preprint suggests that a strategy for a staged return to work could involve

250 return to work for people who are essential for the maintenance of the economic or health system⁵¹ or
251 who face the least risk. Such a strategy could also include a needs assessment for new measures to be
252 implemented to prevent or alleviate negative repercussions for those who cannot return to work, such as
253 individuals and the families of individuals who are in COVID-19 risk groups. Working closely with
254 unions, worker collectives and organisations that serve people at the margins can help ensure that the
255 transition is structural.

256

257 **Consideration 4**

258 ***Provide special support for healthcare and care staff***

259 Many healthcare workers were already under pressure before the pandemic for a variety of structural,
260 professional and personal reasons⁵², and the current situation adds to this pressure. In the transition phase,
261 special concern for those who care for high-risk groups, including people who work in health care and
262 public health, essential service workers and people who work in long-term care facilities, may be
263 necessary. Special training, guidelines and support services may be needed. Healthcare workers and care
264 staff will need to continue protecting themselves from virus exposure and are likely to need further
265 emotional and psychological support to deal with the loss of colleagues or family members or post-
266 traumatic stress. Surveys and rapid assessments of healthcare and care staff can provide insights into their
267 needs and how to respond to these needs⁵³. Access to workplace or home-based webinars⁵⁴ and the
268 development of structured information delivery during handovers and in-service meetings can support this
269 important group. This support could be combined with financial and symbolic rewards and public
270 recognition^{55,56}.

271

272 **Consideration 5**

273 ***Build, strengthen, and maintain trust***

274 By their nature, pandemics create inconsistency and uncertainty of a temporal, spatial and normative
275 nature⁵⁷. Science changes rapidly, and decisions may be tailored to certain contexts and be based on many
276 considerations. This can produce inconsistencies between the risk of viral transmission and the
277 restrictions that exist. Trust in institutions (i.e. perceptions of them as competent, honest and
278 benevolent^{9,43}) influences risk perceptions⁵⁸, helps people manage complexity and is crucial for
279 legitimising decisions made by authorities⁵⁹⁻⁶¹. A strong sense of public trust is critical for harnessing
280 public cooperation and achieving the high rates of behaviour adherence necessary for pandemic
281 management. Therefore, actions and communication should aim to maintain or increase trust⁶².
282 Transparent communication of what is known, what is not known, and what efforts are being taken to
283 learn more can contribute to building a sense of trust⁶³⁻⁶⁵. Knowing the rationale for decisions makes it

284 easier for people to internalise them into mechanisms of intrinsic motivation⁶⁶, so scientific advice to
285 governments should be transparent and not subject to political or government influence. Stakeholder
286 coordination also contributes to trust as it generates consistency and reinforcement of messages⁶³.
287 Governments can obtain the support of individuals or groups who enjoy high levels of trust to
288 communicate important messages or to reach more population groups in culturally and linguistically
289 diverse populations (e.g. religious leaders, former politicians and public figures from the arts, culture,
290 sports). Moreover, robust democratic infrastructures for community voices and pathways for these voices
291 to be translated into decision-making can help to maintain trust⁶⁷. Open access to relevant information
292 expressed in culturally sensitive language can also contribute to a transparent system⁶⁸. Community
293 engagement can demonstrate that the population is being heard and that their views are being considered
294 by decision-makers^{69,70} and promote trust. Surveys and other opportunities to monitor and detect possible
295 shifts in trust and understand how this may be related to new events or new restrictions can enable
296 decision-makers to respond accordingly.

297

298 **Consideration 6**

299 *Enlist existing social norms and foster healthy new norms*

300 Prevailing social norms shape people's behaviours^{71,72}. The rapid employment of risk-reduction strategies
301 in many countries during the pandemic has been made possible by appealing to longstanding norms and,
302 crucially, by creating new norms to support these strategies (e.g. not shaking hands and staying at home).
303 Social norms can also be invoked to support a transition, incremental or otherwise. Historical evidence
304 shows that norms can shift rapidly as a consequence of high-profile actions by authoritative
305 institutions^{73,74}. Once norms are established, they can be drawn upon for communication and to encourage
306 or enforce social compliance. Emphasising the social norms of a target group (e.g. health care workers,
307 young people, the elderly, newcomers, ethnic groups and religious communities⁷⁵) can increase adherence
308 to interventions and improve the effectiveness of communication measures^{27,76,77}. Meta-analytic evidence
309 also suggests that exposure to depictions of risky behaviour is positively correlated with risk-taking,
310 including exposure to risk-positive cognition and attitudes⁷⁸. Thus, messages that privilege examples of
311 desired behaviours are likely to lead to higher adherence than those that emphasise punishment for
312 perceived breaches⁷⁹. When measures are adjusted or when they become more local, messages about what
313 is acceptable and appropriate behaviour may become mixed. Even people who wish to abide by messages
314 from public health authorities may feel pressure to comply with requests to violate the measures (and their
315 private preferences) from others in their immediate environment¹⁷. Guidance on how to resist pressure to
316 participate in large social gatherings and oppose pressure to violate social norms or expectations can be
317 helpful (and can increase self-efficacy; see Consideration 7). Role models, influencers, religious leaders

318 and others who are trusted or in the public eye can help to strengthen prevailing social norms and support
319 new norms⁸⁰. In connection with consolidating positive social norms, emphasising the existence of a
320 broadly shared endeavour and social solidarity—a shared appreciation of interdependence among
321 individuals in a society—and acknowledging that strict rules are useful in the context of high societal
322 threats^{15,81} can be useful during mass emergencies that require collective action⁸². As suggested in the
323 conclusions of preliminary unpublished work⁸³, increasing people’s sense of social empathy towards
324 those at highest risk could be helpful in the context of the COVID-19 transition phase for promoting pro-
325 social actions, such as reducing crowds and avoiding the hoarding of essential supplies (e.g. medical
326 masks). Regular surveys and culturally sensitive studies can be employed to understand social norms and
327 expectations related to COVID-19, detect shifts in these norms and possible new emerging issues (e.g.
328 stigma, misperceptions and conspiracy theories) and feed into planning and communicating the most
329 socially acceptable measures.

330

331 **Consideration 7**

332 *Increase resilience and self-efficacy*

333 Resilience has been defined as the ability to recover after a stressful period⁸⁴. Higher levels of resilience
334 among the public reduce the possible adverse effects of a crisis⁸⁵. The COVID-19 pandemic confronts
335 individuals with conflicting information, competing social interests, internal motivational dynamics,
336 threats daily incomes, and compromised the ability of individuals and communities to meet their basic
337 needs, such as food or shelter¹⁶. In addition to ensuring the fulfilment of basic needs, strengthening
338 resilience^{86,87} can be valuable for crisis management. Recommendations for strengthening resilience
339 include accepting the inevitable (the pandemic has already had a substantial impact on our societies,
340 which may be alleviated but is not likely to end in the near future.); focusing on positive gains (e.g. being
341 able to see some friends again even if we cannot attend large parties); drawing attention to progress (e.g.
342 identifying strategies that have been working); measuring and attending to people’s day-to-day emotional
343 states and well-being and improvements in public health; taking responsibility (e.g. acting where
344 possible); understanding our limitations (making changes that are possible and accepting what is not
345 changeable); reversing negative thoughts (focusing on learning rather than on mistakes); knowing our
346 strengths (highlighting past successes as individuals and communities and strengthening people’s sense of
347 self-efficacy). In some settings, where basic needs are being met and appropriate resources are available,
348 resilience training can be conducted using apps, online programs or large-scale media campaigns^{88,89}.

349

350 One response to fear caused by previously unimaginable adversity is to attempt to control the fear by
351 denying disturbing information and taking actions that are not consistent with individual or collective

352 interests^{90,91}. Such responses can cause non-compliance with public health recommendations; however,
353 they can be mitigated by emphasising self-efficacy (the belief that an action can be completed⁹²) and
354 response efficacy (the belief that an action can reduce a threat^{91,93}). Explaining what should be done (e.g.
355 regular handwashing with water and soap) and the reasons for doing it (e.g. soap breaks down fatty
356 membranes to destroy viruses and bacteria) can promote response efficacy⁹⁴. Making change as easy as
357 possible so that people understand the actions they should take to protect themselves and providing
358 feedback on these actions can increase self-efficacy⁹⁵. It can also increase health literacy, which is the
359 ability to acquire, understand and use health information. Given the high levels of complex, contradictory
360 and false information associated with this pandemic, health literacy is a critical issue, particularly for
361 population groups who experience disadvantage¹². Studies show that feeling able to protect oneself
362 against COVID-19 and knowing about effective measures are predictors of protective behaviours⁹³.
363 Strengthening self-efficacy and response efficacy in a manner that reaches people with low health literacy
364 can empower people to control and take ownership of their actions and generate adherence to protective
365 measures. Should it be necessary to reinstate such measures during future waves of infection, people with
366 high self-efficacy and response efficacy may be more willing to resume such measures as they know the
367 measures will protect them and they believe that they can adhere to the measures.

368

369 **Consideration 8**

370 *Use of clear and positive language*

371 Behavioural science emphasises the importance of ensuring clarity in language and reducing cognitive
372 load⁹⁶. If people find new guidance confusing or difficult to understand, they might ignore it. Complex
373 guidance can create serious navigation problems. An emergency such as the COVID-19 pandemic is
374 characterised by uncertainty and clear guidance is needed. However, such guidance is often based on
375 uncertain evidence. Research has shown that acknowledging uncertainty does not undermine trust⁶⁵.
376 Furthermore, while a language of crisis, panic and war can increase risk awareness—which may be
377 needed—it can also cause anxiety, incite selfish or competitive reactions and undermine people’s sense of
378 collective support and care⁹⁷. Hoarding behaviour, which has been seen in many countries, may be a
379 consequence of this rhetoric⁹⁸. Crisis language may also cause over-cautiousness among some people,
380 who, consequently, may not seek primary care or provide social support to people who need it. By
381 contrast, the use of gain-frame language to highlight the collective gains already achieved and the benefits
382 that could still be achieved may create more ownership and foster compliance with behavioural rules⁹⁹.
383 Building communication strategies that balance risk perception with risk assessment is also key for
384 aligning people’s perception of risk with scientific estimations of the risks⁹⁸. Some research suggests that
385 people are less willing to make sacrifices for others when the benefits are uncertain¹⁰⁰, so the benefits of

386 compliant behaviour should be made concrete and visible. Ownership of something makes it more
387 valuable to an individual (the endowment effect¹⁰¹). Moreover, hedonic framing, which combines smaller
388 losses (e.g. the inconvenience of wearing masks) with larger collective or individual gains (e.g. being able
389 to see friends again), could increase public acceptance of ongoing restrictions¹⁰². Therefore, the aim
390 should be to highlight the gains that can be made from engaging in target behaviours and activate the
391 internal moral compass that renders personal rewards less important than benefits to others^{97,103}.

392 393 **Consideration 9**

394 *Anticipate and manage misinformation*

395 COVID-19 is the first global public health emergency to occur in the era of widespread use of social
396 media, the Internet and smartphones. The WHO has acknowledged the existence of an ‘infodemic’ in
397 addition to the pandemic. The term ‘infodemic’ refers to the availability of an overwhelming amount of
398 information, which can create confusion regarding which, if any, sources are trustworthy¹⁰⁴. Pre-
399 emptively exposing people to techniques that are often employed for misinformation and warning people
400 against misleading techniques can reduce their susceptibility to future falsehoods¹⁰⁵. This prebunking^{106–}
401 ¹⁰⁸ (or cognitive inoculation^{109,110}) could activate resistance mechanisms in the public and empower
402 people to assess the reliability of information¹⁰⁵. However, some misinformation cannot be foreseen.
403 Therefore, debunking approaches¹¹¹, which counter widespread myths and uncover why they are
404 wrong^{112–114}, are also needed when misinformation is disseminated. Cognitive inoculation may also be
405 useful for priming the public for the transition phase. This involves foreseeing the likelihood of
406 widespread misinformation, explaining how people can manage this situation, addressing and talking
407 openly about the possible aversive effects of physical isolation, reassuring people that these aversive
408 effects are reversible and exploring how they can be addressed and mitigated. Pre-empting future waves
409 of the virus based on currently available evidence and clearly communicating the potential continuous
410 adjustment of restrictive measures may lay the foundation for greater acceptance. Prebunking and
411 debunking approaches (i.e. inoculating people against misinformation before spreads and correcting
412 misinformation after it appears) will also be needed if and when a COVID-19 vaccine becomes available,
413 as misinformation about this topic is likely to be disseminated.

414 415 **Consideration 10**

416 *Engage with media outlets*

417 Non-peer-reviewed research has suggested that there are high levels of information-seeking during the
418 COVID-19 pandemic¹¹⁵. During previous outbreaks of other diseases, combined trust in both the
419 government and the media has been associated with increased preventive behaviours, such as hand-

420 washing¹¹⁶. One study revealed that social media information increased risk perception during an
421 outbreak, while legacy media, such as national television and broadsheet papers, increased proactive
422 preventive behaviour¹¹⁷. For governments, media outlets are important influencers and critical channels
423 for reaching the public. A non-peer-reviewed preprint has suggested that established news and online
424 media outlets may alleviate discomfort during a crisis¹¹⁸. Credible media outlets can also showcase
425 appropriate behaviours¹¹⁹ and provide helpful perspectives from trusted figures (e.g. established social
426 media influencers and medical professionals¹²⁰⁻¹²²). However, media consumption can also cause stress
427 and anxiety and spread misinformation⁹⁷. Since the media can play a critical role in communicating and
428 balancing information and influencing public sentiment and discussion during a public health crisis^{123,124},
429 the WHO has developed guidance on how authorities can work with the media^{125,126}. A combined
430 approach that targets legacy platforms, audience-specific and local outlets and social media may be the
431 most efficient¹²⁷. Particular groups may use, trust or feel represented by certain media¹¹⁷—which can be
432 critical in a potentially increasingly polarised debate¹²⁸—and behavioural studies stress the impact of
433 communicating behavioural norms at a local level¹¹⁹. Thus, governments can continue to proactively
434 reach out to a variety of media during the transition while respecting their independence and highlighting
435 their role and potential influence¹²⁹. Even if measures have not been implemented, journalists and media
436 can frame shared understandings and prime their audiences for the future using strategies such as
437 introducing important terminology¹³⁰ (e.g. ‘new normal’, ‘gradual changes’, ‘adjustments’, ‘need for
438 cooperation’). The following key messages may be employed: this is an unprecedented situation; there
439 may be changes to the strategy as we learn more; this is a solvable situation; and greater restrictions may
440 become necessary again in the event of a second or third wave. Journalists and the media can support the
441 framing of the transition phase as an all-of-society approach and responsibly perform their important role
442 by avoiding actions such as feeding confusion and blame and reporting inconsistent messages,
443 controversies, rumours, misinformation and speculation^{131,132}.

444

445 **Inform and qualify action with evidence from behavioural and cultural research**

446 To effectively manage the transition phase, the considerations outlined above need to be adapted to
447 individual contexts¹³³. Thus, the process should be informed by a situation analysis and current evidence
448 from behavioural, social and cultural sciences applicable to the specific context (examples are provided in
449 Table 1) and be supported by engagement with communities. Continued cultural adjustment of the
450 response strategy fosters spaces for listening to the voices of diverse communities during the development
451 of behavioural strategies and the creation of support processes for sustaining behaviours^{68,75,134,135}. These
452 data can help us understand how people are experiencing, interpreting, responding to and accepting the

453 COVID-19 response and can inform the development of interventions and support the tailoring of
454 measures to subgroups of the population.

455

456 **Limitations**

457 Although we sought experts from different global regions and drew on research from around the globe,
458 we are aware that all of the experts except one expert live in high-income countries. Inevitably, their
459 fields of study and lived experiences have shaped the final report. Furthermore, some aspects may be
460 missing from one scientific perspective and over-emphasised from another perspective. However, these
461 limitations were weighed against the need to provide decision-makers with evidence in a very short time.
462 We also acknowledge that the considerations described in this paper are based on evidence from various
463 sources of literature, some of which relates to outbreaks, crises and pandemic situations and some that is
464 unrelated to these situations. The validity and reliability of the evidence from many fields may be
465 challenged as some studies have not been replicated^{136,137}. A substantial portion of the evidence also
466 originates in correlational studies, rather than Randomized Controlled Trials (and systematic reviews and
467 meta-analyses of high quality evidence). Moreover, most published research in the field of ‘behavioural
468 science’ originates in Western, educated, industrialised, rich and democratic countries¹³⁸, which makes
469 generalising the results to other contexts difficult¹³⁹. These limitations have caused some scholars to argue
470 that this type of science should not inform crisis response¹³⁷. In this paper, however, we propose
471 complementing existing evidence (summarised here) with real-time data collected in specific situations
472 and countries²⁹. This combination helps to interpret the newly generated evidence based on existing
473 evidence and to generate and select relevant questions and variables to perform ad-hoc crisis research. In
474 no case should scientific evidence provide decision-makers with a false sense of certainty as all evidence
475 is surrounded by the uncertainty inherent in every scientific process. However, the evidence will help
476 guide thinking and decision-making in a systematic way.

477

478 **Conclusion**

479 In sum, evidence from multiple sources allows us to better understand population perspectives, gauge
480 emotional responses and subjective experiences, anticipate unwanted scenarios, introduce mitigation
481 measures and plan for the most effective actions to improve public understanding and compliance.
482 Understanding how the pandemic and the restrictions imposed are impacting people’s everyday lives,
483 their social and mental health and their motivation and intentions to follow recommended practices is
484 critical for the sustained success of the pandemic response during the transition^{3,28} and will be a valuable
485 source for ensuring our preparedness for future pandemics.

486

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491 affiliated.

492

493 **Figure captions**

494

495 **Figure 1: Ten considerations for effectively managing the COVID-19 transition.** *Note:* The
496 considerations substantiate the WHO/Euro principle #6 ‘Communities have a voice, are informed,
497 engaged and participate in the transition’³ and were derived from an online expert consultation. The
498 considerations do not imply a temporal sequence and are interrelated just as listening to communities,
499 engaging with them and informing them are interlinked. The ten considerations are aimed at providing
500 suggestions to governments. The awareness that there will be no going back to normal but a stepwise
501 adaptation to a ‘new normal’ is in the centre of the transition process (#1). Giving communities a voice
502 (#2-4), engaging them in the transition (#5-7), and informing them in the best possible way (#8-10)³ can
503 help effectively manage the transition.

504

505

506

507 **Table 1: Examples of how to enrich the ten considerations with real-time data and further evidence**
 508 **and how to apply the evidence obtained to inform the transition phase**

Consideration	How behavioural and cultural research can be applied*	Action examples Action should always be informed by an analysis of the situation**
1) Implement a phased approach to a 'new normal'	Conduct research to understand population acceptance and barriers to measures implemented or planned and employ this research in planning and communication	<ul style="list-style-type: none"> ● Plan a detailed transition: set goals for each phase with red, yellow and green signs for pandemic response adjustment scenarios and transparently communicate these goals ● Anticipate unwanted scenarios based on social, behavioural and cultural literature and previous crises in the country and prepare prevention and mitigation measures for these scenarios ● Provide tailored guidance to priority population groups as needed following segmentation
2) Balance individual rights with the social good	Use evidence from regular surveys, hotline monitoring, social media monitoring and qualitative ethnographic studies to understand prevailing norms and values and acceptability of implemented and planned measures and to detect shifts in acceptance or barriers to measures and be guided by this evidence in planning	<ul style="list-style-type: none"> ● Use existing research to identify elements of culture and history, social norms, beliefs and values and gather multi-disciplinary expert panels to provide input and scientific evidence; panels could include anthropologists, historians, social scientists and cultural studies specialists ● Focus messages on identified prevailing norms and values; for example, emphasise the substantial impact of measures on protecting the community, individual families and/or workers ● Consider fundamental issues regarding the individual versus the social good, privacy and protection of individual rights
3) Prioritise people at highest risk of negative consequences	Conduct research to understand implications for people at highest risk, their mental and physical health needs and possible emerging discrimination and stigma and apply this to inform action	<ul style="list-style-type: none"> ● Address basic needs and fundamental human rights, such as access to employment, education, housing, food and health care ● Prioritise people who are most severely affected, either mentally, physically or financially ● Ensure that prioritising certain groups will not increase stigma or discrimination and take action to prevent and/or decrease these effects ● Coordinate closely and engage in reciprocal communication with traditional and social media outlets, influencers and mediators who work with these groups
4) Provide special support for healthcare and caring staff	Conduct research to identify specific needs of healthcare and caring staff (e.g. related to working hours, childcare, stress and protective equipment) and respond to these needs	<ul style="list-style-type: none"> ● Express the gratitude of leadership and foster community support ● Provide guidance on the rights and entitlements of healthcare and caring workers ● Provide guidance on organising primary care and long-term care homes and supporting users in accessing them safely ● Support working from home and video-conferencing where possible ● Engage staff in protecting themselves and providing trusted public health advice to patients and the public ● Start planning for inclusion of epidemic management basics and communication with patients in core curricula of medical/nursing schools
5) Build, strengthen, and maintain trust	Conduct research to understand trust in specific institutions, spokespersons and influencers and to detect possible shifts in this area and how such shifts may be related to new events or new	<ul style="list-style-type: none"> ● Organise daily media briefings where trusted spokespersons, identified through population surveys, are clear, humble and empathetic and people feel part of the process instead of feeling as if they are being lectured ● Explain how evidence from population surveys are being considered as the voices of populations ● Acknowledge uncertainty, be transparent about unanswered

	restrictions; use this research to inform planning	<p>questions and balance the need for clarity with acknowledgement of uncertainty about the evolution of the outbreak</p> <ul style="list-style-type: none"> ● Respect all voices and respond to all questions
6) Enlist existing social norms and foster healthy new norms	Conduct research to understand social norms and expectations related to COVID-19 and to detect shifts in these expectations and possible new emerging issues (e.g. stigma, misperceptions and conspiracy theories) and leverage this evidence in communication and planning of the most socially acceptable measures	<ul style="list-style-type: none"> ● Ensure that risk communication and community engagement occur to establish that measures are both scientifically accurate and acceptable by people ● Engage citizens by providing community leaders with opportunities to co-create transition plans ● Engage grassroots activists, local communities, university students, and volunteers in measures such as psychosocial support, helplines, support for infected people, phone-based contact tracing and message development ● Work with influencers to amplify messages about the transition aimed at different population groups ● Engage influencers and community leaders in sharing guidance on how to cope with competing interests ● Coordinate across sectors; activities could include working with the arts and culture sector to fund or support COVID19-specific arts activities
7) Increase resilience and self-efficacy	Conduct research to understand the population's capability to continue to adhere to restrictions and recommendations, which may signal the need for adjustment to restrictions	<ul style="list-style-type: none"> ● Continue to focus on public health advice regarding COVID-19, including hand and respiratory hygiene, and adjust messages in accordance with transition phase stages ● Produce proactive advice about the importance of self-care, stress management, healthy habits, social interactions and prioritising rest, sleep and exercise, taking into account diversity in health literacy ● Communicate the availability of individual and family support (e.g. education and schooling support, return to work support and guidelines related to alcohol/substance use, tobacco, weight/sedentary time, nutrition, stress, and safely accessing primary care) provided at national level or by the WHO ● Engage with and support communities and organisations who work in the areas of domestic violence, child protection, temporary home offers, social isolation and other areas ● Strengthen coping strategies for navigating competing interests (e.g. guidance on how to respond to expectations of friends and family regarding social interactions)
8) Use clear and positive language	Conduct research to understand general perceptions related to COVID-19 and trust in spokespersons and base strategies on these findings	<ul style="list-style-type: none"> ● Communicate clearly and focus on the benefits and gains ● Seek to communicate risk based on scientific evidence to prevent both under- and over-cautiousness among the public ● Avoid using war language (e.g. war against COVID-19, the frontline response), which may increase stigma and undermine people's sense of collective support and care and lead to individualistic behaviours such as hoarding ● Positive wording may include progress, advance, community, cohesion, improve, perspective, reasonable, resourceful, optimistic and generous ● Refer to 'people who have been infected with COVID-19' rather than 'cases'
9) Anticipate and manage mis-information	Conduct research to identify general perceptions related to COVID-19 and misperceptions and myths	<ul style="list-style-type: none"> ● Anticipate unwanted scenarios and gain evidence from social, behavioural and cultural literature, including lessons that can be learned from previous pandemics and crises in the country ● Advise people that they are likely to receive misinformation and inform them where they can access trustworthy facts ● Communicate proactively regarding potential future waves of

		transmission and what these scenarios might entail
10) Engage with media outlets	Conduct research to understand and detect shifts in trust in spokespersons and the use of various media outlets within the population and sub-segments of the population; use this to plan interactions with the media	<ul style="list-style-type: none"> ● Proactively reach out to media outlets to engage them as partners in the response, respect their independence and highlight their role and potential influence ● Use the power of the media to alleviate discomfort from the pandemic; appeal to the media to avoid feeding fear, stress, confusion, polarisation and stigmatisation ● Appeal to the media to present authoritative information and avoid confusion with speculations and misinformation

509 *Note:* The table provides examples and is not intended to be read as prescriptive guidance. The examples
510 in columns 2 and 3 were generated by applying the considerations to potential country contexts. Input was
511 suggested and preselected mainly by WHO/Euro staff and reviewed by all authors. * Various
512 opportunities to monitor and understand public sentiments, responses, behaviours and physical and
513 mental health reactions to the pandemic can be drawn upon, such as regular surveys^{29,140-147} (141-147:
514 preprints of study protocols without peer review), (social) media monitoring¹⁴⁸, COVID-19 hotline
515 monitoring, qualitative ethnographic studies, rapid assessments of priority population groups, diary
516 projects¹⁴⁹, virtual interviews and group discussions, ‘big data’ such as individual location data (e.g. from
517 mobile phones^{150,151}), data on consumer trends and data on use of primary care. ** Examples of sources to
518 be analysed include epidemiological, structural, cultural, financial, political, health systems capacity-
519 related data.

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524 **References**

- 525 1. Brooks, S. K. et al. The psychological impact of quarantine and how to reduce it: rapid
526 review of the evidence. *Lancet* **395**, 912-920 (2020).
- 527 2. World Health Organization. *Pandemic Influenza Risk Management: A WHO guide to*
528 *inform and harmonize national and international pandemic preparedness and response* (World
529 Health Organization, 2017).
- 530 3. World Health Organization, Regional Office for Europe. Strengthening and adjusting
531 public health measures throughout the COVID-19 transition phases. Policy considerations for the
532 WHO European Region, 24 April 2020. [http://www.euro.who.int/en/health-topics/health-](http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-considerations-for-the-who-european-region,-24-april-2020)
533 [emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-](http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-considerations-for-the-who-european-region,-24-april-2020)
534 [guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-](http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-considerations-for-the-who-european-region,-24-april-2020)
535 [adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-](http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-considerations-for-the-who-european-region,-24-april-2020)
536 [considerations-for-the-who-european-region,-24-april-2020](http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-and-adjusting-public-health-measures-throughout-the-covid-19-transition-phases.-policy-considerations-for-the-who-european-region,-24-april-2020) (2020).
- 537 4. Anderson, R. M., Heesterbeek, H., Klinkenberg, D. & Hollingsworth, T. D. How will
538 country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet* **395**,
539 931–934 (2020).
- 540 5. Radusin, M. The Spanish flu, part II: the second and third wave. *Vojnosanit. Pregl.* **69**,
541 917–927 (2012).
- 542 6. Tognotti, E. Influenza pandemics: a historical retrospect. *J. Infect. Dev. Countr.* **3**, 331–
543 334 (2009).
- 544 7. Betsch, C. et al. German COVID-19 Snapshot Monitoring (COSMO) - Welle 8
545 (21.04.2020). <http://dx.doi.org/10.23668/psycharchives.2883> (2020).
- 546 8. Okruszek, L., Aniszewska-Stańczuk, A., Piejka, A., Wiśniewska, M. & Żurek, K. Safe
547 but lonely? Loneliness, mental health symptoms and COVID-19. Preprint at:
548 <https://psyarxiv.com/9njps/> (2020).
- 549 9. WHO Europe. *Vaccination and Trust - How Concerns Arise and the Role of*
550 *Communication in Mitigating Crises* (World Health Organization, 2017).
- 551 10. Fairhead, J. *Vaccine Anxieties: Global Science, Child Health and Society*. (Routledge,
552 2012).
- 553 11. MacDonald, N. E. & SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy:
554 definition, scope and determinants. *Vaccine* **33**, 4161–4164 (2015).
- 555 12. Paakkari, L. & Okan, O. COVID-19: health literacy is an underestimated problem.
556 *Lancet Public Health* **5**, e249-e250 (2020).
- 557 13. McCarthy-Larzelere, M. et al. Psychometric properties and factor structure of the Worry
558 Domains Questionnaire. *Assessment* **8**, 177–191 (2001).
- 559 14. Sunstein, C. *Laws of Fear: Beyond the Precautionary Principle (The Seeley Lectures)*
560 (Cambridge University Press, 2005).
- 561 15. Gelfand, M. J. et al. Differences between tight and loose cultures: a 33-nation study.
562 *Science* **332**, 1100–1104 (2011).
- 563 16. Sah, S. Policy solutions to conflicts of interest: the value of professional norms. *Behav.*
564 *Public Policy* **1**, 177–189 (2017).
- 565 17. Sah, S. Why you find it so hard to resist taking bad advice. *The Los Angeles Times*
566 [https://www.latimes.com/opinion/story/2019-10-29/advice-neuroscience-psychology-social-](https://www.latimes.com/opinion/story/2019-10-29/advice-neuroscience-psychology-social-pressure-research)
567 [pressure-research](https://www.latimes.com/opinion/story/2019-10-29/advice-neuroscience-psychology-social-pressure-research) (25 May 2020).
- 568 18. Stern, P. C. Contributions of psychology to limiting climate change. *Am. Psychol.* **66**,
569 303–314 (2011).

- 570 19. Jaramillo, E. Tuberculosis and stigma: predictors of prejudice against people with
571 tuberculosis. *J. Health Psychol.* **4**, 71–79 (1999).
- 572 20. Golden, J., Conroy, R. M., O’Dwyer, A. M., Golden, D. & Hardouin, J.-B. Illness-related
573 stigma, mood and adjustment to illness in persons with hepatitis C. *Soc. Sci. Med.* **63**, 3188–3198
574 (2006).
- 575 21. Leavitt, J. W. *Typhoid Mary: captive to the public’s health*. (Beacon Press, 2014).
- 576 22. Berridge, V. & Strong, P. *AIDS and contemporary history*. (Cambridge University Press,
577 2002).
- 578 23. Budhwani, H. & Sun, R. Creating COVID-19 stigma by referencing the novel
579 coronavirus as the ‘Chinese virus’ on Twitter: quantitative analysis of social media data. *J. Med.*
580 *Internet Res.* **22**, e19301 (2020).
- 581 24. Devakumar, D., Shannon, G., Bhopal, S. S. & Abubakar, I. Racism and discrimination in
582 COVID-19 responses. *Lancet* **395**, 1194 (2020).
- 583 25. Mak, W. W. S., Poon, C.Y.M., Pun, L.Y.K., Cheung, S.F. Meta-analysis of stigma and
584 mental health. *Social Science & Medicine* **65**, 245-261 (2007).
- 585 26. Fox, A. B., Earnshaw, V. A., Taverna, E. & Vogt, D. Conceptualizing and measuring
586 mental illness stigma: the mental illness stigma framework and critical review of measures.
587 *Stigma Health* **3**, 348–376 (2018).
- 588 27. Bavel, J. J. V. et al. Using social and behavioural science to support COVID-19
589 pandemic response. *Nat. Hum. Behav.* <https://doi.org/10.1038/s41562-020-0884-z> (2020).
- 590 28. Michie, S., van Stralen, M. M. & West, R. The behaviour change wheel: a new method
591 for characterising and designing behaviour change interventions. *Implement. Sci.*
592 <https://doi.org/10.1186/1748-5908-6-42> (2011).
- 593 29. Betsch, C., Wieler, L. H. & Habersaat, K. Monitoring behavioural insights related to
594 COVID-19. *Lancet* **395**, 1255-1256 (2020).
- 595 30. Abe, J., Talbot, D. M. & Gellhoed, R. Effects of a peer program on international student
596 adjustment. *J. Coll. Stud. Dev.* **39**, 539–547 (1998).
- 597 31. Smith, R. A. & Khawaja, N. G. A review of the acculturation experiences of international
598 students. *Int. J. Intercult. Relat.* **35**, 699–713 (2011).
- 599 32. Baker, J. E. Preparing prisoners for their return to the community. *Fed. Probation* **30**, 43
600 (1966).
- 601 33. Schulting, A. B., Malone, P. S. & Dodge, K. A. The effect of school-based kindergarten
602 transition policies and practices on child academic outcomes. *Dev. Psychol.* **41**, 860–871 (2005).
- 603 34. Södersten, P., Bergh, C., Leon, M., Brodin, U. & Zandian, M. Cognitive behavior therapy
604 for eating disorders versus normalization of eating behavior. *Physiol. Behav.* **174**, 178–190
605 (2017).
- 606 35. Wood, W. & Neal, D. T. A new look at habits and the habit-goal interface. *Psychol. Rev.*
607 **114**, 843 (2007).
- 608 36. Wood, W. & Rünger, D. Psychology of habit. *Annu. Rev. Psychol.* **67**, 289–314 (2016).
- 609 37. Ouellette, J. A. & Wood, W. Habit and intention in everyday life: the multiple processes
610 by which past behavior predicts future behavior. *Psychol. Bull.* **124**, 54–74 (1998).
- 611 38. Gostin, L. O. & Powers, M. What does social justice require for the public’s health?
612 Public health ethics and policy imperatives. *Health Aff.* **25**, 1053–1060 (2006).
- 613 39. Kitayama, S. & Uskul, A. K. Culture, mind, and the brain: current evidence and future
614 directions. *Annu. Rev. Psychol.* **62**, 419–449 (2011).
- 615 40. Upshur, R. The ethics of quarantine. *AMA J. Ethics* **5**, 393–395 (2003).

- 616 41. Lewnard, J. A. & Lo, N. C. Scientific and ethical basis for social-distancing interventions
617 against COVID-19. *Lancet Infect. Dis.* [https://doi.org/10.1016/S1473-3099\(20\)30190-0](https://doi.org/10.1016/S1473-3099(20)30190-0) (2020).
- 618 42. Barbisch, D., Koenig, K. L. & Shih, F.-Y. Is there a case for quarantine? Perspectives
619 from SARS to Ebola. *Disaster Med. Public* **9**, 547–553 (2015).
- 620 43. Renn, O. Risk communication: insights and requirements for designing successful
621 communication programs on health and environmental hazards. in *Handbook Of Risk And Crisis*
622 *Communication* (eds. Heath, R.L., O’Hair H.D.) 80-98 (Routledge, 2008).
- 623 44. Degeling, C. et al. Community perspectives on the benefits and risks of technologically
624 enhanced communicable disease surveillance systems: a report on four community juries. *BMC*
625 *Med. Ethics* **21**, 31 (2020).
- 626 45. Yancy, C. W. COVID-19 and African Americans. *JAMA* **323**, 1891-1892 (2020).
- 627 46. Boyce, T. Towards equity in immunisation. *Euro Surveill.*
628 <https://dx.doi.org/10.2807/2F1560-7917.ES.2019.24.2.1800204> (2017).
- 629 47. Basu, A. & Dutta, M. J. Sex workers and HIV/AIDS: analyzing participatory culture-
630 centered health communication strategies. *Hum. Commun. Res.* **35**, 86–114 (2009).
- 631 48. Basu, A. & Dutta, M. J. ‘We are mothers first’: localocentric articulation of sex worker
632 identity as a key in HIV/AIDS communication. *Women Health* **51**, 106–123 (2011).
- 633 49. Dutta, M. J. et al. Critical health communication method as embodied practice of
634 resistance: culturally centering structural transformation through struggle for voice. *Front.*
635 *Commun.* **4**, 67 (2019).
- 636 50. Sastry, S., Stephenson, M., Dillon, P. & Carter, A. A meta-theoretical systematic review
637 of the culture-centered approach to health communication: toward a refined, ‘nested’ model.
638 *Commun. Theory* <https://doi.org/10.1093/ct/qtz02> (2019).
- 639 51. Oswald, A. J. & Powdthavee, N. The Case for Releasing the Young from Lockdown: A
640 Briefing Paper for Policymakers. Preprint at <https://ssrn.com/abstract=3573283> (2020).
- 641 52. Carrieri, D. et al. ‘Care under pressure’: a realist review of interventions to tackle
642 doctors’ mental ill-health and its impacts on the clinical workforce and patient care. *BMJ Open*
643 **8**, e021273 (2018).
- 644 53. Seale, H., Leask, J., Po, K. & MacIntyre, C. R. ‘Will they just pack up and leave?’–
645 attitudes and intended behaviour of hospital health care workers during an influenza pandemic.
646 *BMC Health Serv. Res.* **9**, 30 (2009).
- 647 54. Liu, S. et al. Online mental health services in China during the COVID-19 outbreak.
648 *Lancet Psychiat.* **7**, e17–e18 (2020).
- 649 55. Kosfeld, M. & Neckermann, S. Getting more work for nothing? Symbolic awards and
650 worker performance. *Am. Econ. J. Microecon.* **3**, 86–99 (2011).
- 651 56. Lacetera, N., Macis, M. & Slonim, R. Economic rewards to motivate blood donations.
652 *Science* **340**, 927–928 (2013).
- 653 57. Harrison, M. Pandemics. in *The Routledge History Of Disease* (ed. Jackson, M.) 128–146
654 (2016).
- 655 58. Dryhurst, S. Risk perceptions of COVID-19 around the world. *J. Risk Res.*
656 <https://doi.org/10.1080/13669877.2020.1758193> (2020).
- 657 59. Bennett, P., Calman, K., Curtis, S. & Fischbacher-Smith, D. *Risk Communication and*
658 *Public Health*. (Oxford University Press, 2010).
- 659 60. Giddens, A. *The Consequences of Modernity* (John Wiley & Sons, 2013).
- 660 61. Luhmann, N. *Trust and Power* (John Wiley & Sons, 2018).
- 661 62. Reynolds, B. & W. Seeger, M. Crisis and emergency risk communication as an

- 662 integrative model. *J. Health Commun.* **10**, 43–55 (2005).
- 663 63. Salvi, C. et al. Emergency risk communication—early lessons learned during the pilot
664 phase of a five-step capacity-building package. *Public Health Panorama* **4**, 51–57 (2018).
- 665 64. Renn, O. & Levine, D. Credibility and trust in risk communication. in *Communicating*
666 *Risks to the Public* (eds. Kasperson, R. E., Stallen, P. J. M.) 175–217 (Springer Netherlands,
667 1991).
- 668 65. Bles, D. The effects of communicating uncertainty on public trust in facts and numbers.
669 *P. Natl. Acad. Sci. USA* **117**, 7672–7683 (2020).
- 670 66. Chalofsky, N. & Krishna, V. meaningfulness, commitment, and engagement: the
671 intersection of a deeper level of intrinsic motivation. *Adv. Dev. Hum. Resour.* **11**, 189–203
672 (2009).
- 673 67. Ulbig, S. G. Voice is not enough. *Public Opin. Q.* **72**, 523–539 (2008).
- 674 68. Ledingham, K., Hinchliffe, S., Jackson, M., Thomas, F. & Tomson, G. *Antibiotic*
675 *Resistance: Using a Cultural Contexts of Health Approach to Address a Global Health*
676 *Challenge* (World Health Organization, 2019).
- 677 69. Toppenberg-Pejcic, D. et al. Emergency risk communication: lessons learned from a
678 rapid review of recent gray literature on Ebola, Zika, and yellow fever. *J. Health Commun.* **34**,
679 437–455 (2019).
- 680 70. World Health Organization. *Communicating Risk in Public Health Emergencies: A WHO*
681 *Guideline for Emergency Risk Communication (ERC) Policy And Practice* (World Health
682 Organization, 2017).
- 683 71. Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J. & Griskevicius, V. The
684 constructive, destructive, and reconstructive power of social norms. *Psychol. Sci.* **18**, 429–434
685 (2007).
- 686 72. Sheeran, P. et al. The impact of changing attitudes, norms, and self-efficacy on health-
687 related intentions and behavior: a meta-analysis. *Health Psychol.* **35**, 1178 (2016).
- 688 73. Tankard, M. E. & Paluck, E. L. Norm perception as a vehicle for social change. *Soc.*
689 *Issues Policy Rev.* **10**, 181–211 (2016).
- 690 74. Tankard, M. E. & Paluck, E. L. The effect of a supreme court decision regarding gay
691 marriage on social norms and personal attitudes. *Psychol. Sci.* **28**, 1334–1344 (2017).
- 692 75. Wilkinson, A., Parker, M., Martineau, F. & Leach, M. Engaging ‘communities’:
693 anthropological insights from the West African Ebola epidemic. *Philos. T. R. Soc. B.*
694 <https://doi.org/10.1098/rstb.2016.0305> (2017).
- 695 76. Burchell, K., Rettie, R. & Patel, K. Marketing social norms: social marketing and the
696 ‘social norm approach’. *J. Consum. Behav.* **12**, 1–9 (2013).
- 697 77. Andrews, J. L., Foulkes, L. & Blakemore, S. J. Peer influence in adolescence: public-
698 health implications for COVID-19. *Trends Cogn. Sci.* <https://doi.org/10.1016/j.tics.2020.05.001>
699 (2020).
- 700 78. Fischer, P., Greitemeyer, T., Kastenmüller, A., Vogrincic, C. & Sauer, A. The effects of
701 risk-glorifying media exposure on risk-positive cognitions, emotions, and behaviors: a meta-
702 analytic review. *Psychol. Bull.* **137**, 367 (2011).
- 703 79. Sunstein, C. R. Lapidation and Apology. *SSRN* <http://dx.doi.org/10.2139/ssrn.3407390>
704 (2019).
- 705 80. Valente, T. W. & Pumpuang, P. Identifying opinion leaders to promote behavior change.
706 *Health Educ. Behav.* **34**, 881–896 (2007).
- 707 81. Roos, P., Gelfand, M., Nau, D. & Lun, J. Societal threat and cultural variation in the

- 708 strength of social norms: an evolutionary basis. *Organ. Behav. Human Decis. Process.* **129**, 14–
709 23 (2015).
- 710 82. Bierhoff, H. W. & Küpper, B. Social psychology of solidarity. in *Solidarity* (ed. Bayertz,
711 K.) 133–156 (Springer, 1999).
- 712 83. Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C. & Petersen, M. B. The emotional
713 path to action: Empathy promotes physical distancing during the COVID-19 pandemic. Preprint
714 at <https://psyarxiv.com/y2cg5/> (2020).
- 715 84. Carver, C. S. Resilience and thriving: issues, models, and linkages. *J. Soc. Issues* **54**,
716 245–266 (2010).
- 717 85. García-Mira, R., Real, J. E., Uzzell, D. L., San Juan, C. & Pol, E. Coping with a threat to
718 quality of life: the case of the Prestige disaster. *Eu. Rev. Appl. Psychol.* **56**, 53–60 (2006).
- 719 86. Joseph, S. & Linley, P. A. *Trauma, Recovery, and Growth: Positive Psychological*
720 *Perspectives on Posttraumatic Stress* (John Wiley & Sons, 2008).
- 721 87. Richardson, G. E., Neiger, B. L., Jensen, S. & Kumpfer, K. L. The resiliency model.
722 *Health Educ. J.* **21**, 33–39 (1990).
- 723 88. Chmitorz, A. et al. Intervention studies to foster resilience – a systematic review and
724 proposal for a resilience framework in future intervention studies. *Clin. Psychol. Rev.* **59**, 78–100
725 (2018).
- 726 89. Mistretta, E. G. et al. Resilience training for work-related stress among health care
727 workers: results of a randomized clinical trial comparing in-person and smartphone-delivered
728 interventions. *J. Occup. Environ. Med.* **60**, 559–568 (2018).
- 729 90. Witte, K. Fear control and danger control: a test of the extended parallel process model
730 (EPPM). *Commun. Monogr.* **61**, 113–134 (1994).
- 731 91. Tannenbaum, M. B. et al. Appealing to fear: a meta-analysis of fear appeal effectiveness
732 and theories. *Psychol. Bull.* **141**, 1178–1204 (2015).
- 733 92. Bandura, A. Self-efficacy mechanism in human agency. *Am Psychol.* **37**, 122–147
734 (1982).
- 735 93. Bish, A. & Michie, S. Demographic and attitudinal determinants of protective behaviours
736 during a pandemic: a review. *Br. J. Health Psychol.* **15**, 797–824 (2010).
- 737 94. Stewart, J. E., Wolfe, G. R., Maeder, L. & Hartz, G. W. Changes in dental knowledge
738 and self-efficacy scores following interventions to change oral hygiene behavior. *Patient Educ.*
739 *Couns.* **27**, 269–277 (1996).
- 740 95. Ashford, S., Edmunds, J. & French, D. P. What is the best way to change self-efficacy to
741 promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *Br.*
742 *J. Health Psychol.* **15**, 265–288 (2010).
- 743 96. Loewenstein, G., Sunstein, C. R. & Golman, R. Disclosure: psychology changes
744 everything. *Annu. Rev. Econ.* **6**, 391–419 (2014).
- 745 97. Van Bavel, J. J. et al. Using social and behavioural science to support COVID-19
746 pandemic response. *Nat. Hum. Behav.* **4**, 460–471 (2020).
- 747 98. Sandman, P. M. *Responding to Community Outrage: Strategies for Effective Risk*
748 *Communication* (AIHA, 1993).
- 749 99. Gallagher, K. M. & Updegraff, J. A. Health message framing effects on attitudes,
750 intentions, and behavior: a meta-analytic review. *Ann. Behav. Med.* **43**, 101–116 (2012).
- 751 100. Dannenberg, A., Löschel, A., Paolacci, G., Reif, C. & Tavoni, A. On the provision of
752 public goods with probabilistic and ambiguous thresholds. *Environ. Resour. Econ.* **61**, 365–383
753 (2015).

- 754 101. Kahneman, D., Knetsch, J. L. & Thaler, R. H. Experimental tests of the endowment
755 effect and the coase theorem. *J. Political Econ.* **98**, 1325–1348 (1990).
- 756 102. Lindenberg, S. & Steg, L. Normative, gain and hedonic goal frames guiding
757 environmental behavior. *J. Soc. Issues* **63**, 117–137 (2007).
- 758 103. Crockett, M. J., Siegel, J. Z., Kurth-Nelson, Z., Dayan, P. & Dolan, R. J. Moral
759 transgressions corrupt neural representations of value. *Nat. Neurosci.* **20**, 879–885 (2017).
- 760 104. Zarocostas, J. How to fight an infodemic. *Lancet* **395**, 676 (2020).
- 761 105. van der Linden, S., Maibach, E., Cook, J., Leiserowitz, A. & Lewandowsky, S.
762 Inoculating against misinformation. *Science* **358**, 1141–1142 (2017).
- 763 106. van der Linden, S., Leiserowitz, A., Rosenthal, S. & Maibach, E. Inoculating the public
764 against misinformation about climate change. *Glob. Challenges*
765 <https://doi.org/10.1002/gch2.201600008> (2017).
- 766 107. Roozenbeek, J. & Linden, S. Fake news game confers psychological resistance against
767 online misinformation. *Palgrave Commun.* **5**, 65 (2019).
- 768 108. McGuire, W. J. Public communication as a strategy for inducing health-promoting
769 behavioral change. *Prev. Med.* [https://doi.org/10.1016/0091-7435\(84\)90086-0](https://doi.org/10.1016/0091-7435(84)90086-0) (1984).
- 770 109. McGuire, W. Inducing resistance to persuasion. in *Advances in Experimental Social*
771 *Psychology* (Academic Press, 1964).
- 772 110. Banas, J. A. & Rains, S. A. A meta-analysis of research on inoculation theory. *Commun.*
773 *Monogr.* **77**, 281–311 (2010).
- 774 111. Chan, M. S., Jones, C. R., Hall Jamieson, K. & Albarracín, D. Debunking: a meta-
775 analysis of the psychological efficacy of messages countering misinformation. *Psychol. Sci.* **28**,
776 1531–1546 (2017).
- 777 112. Schmid, P. & Betsch, C. Effective strategies for rebutting science denialism in public
778 discussions. *Nat. Hum. Behav.* **3**, 931–939 (2019).
- 779 113. Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N. & Cook, J. Misinformation
780 and its correction continued influence and successful debiasing. *Psychol. Sci.* **13**, 106–131
781 (2012).
- 782 114. Cook, J. & Lewandowsky, S. *The Debunking Handbook*. (University of Queensland,
783 2012).
- 784 115. Strzelecki, A. The second worldwide wave of interest in coronavirus since the COVID-19
785 outbreaks in South Korea, Italy and Iran: a Google Trends study. Preprint at
786 <https://arxiv.org/abs/2003.10998> (2020).
- 787 116. Liao, Q., Cowling, B. J., Lam, W. W. T. & Fielding, R. Factors affecting intention to
788 receive and self-reported receipt of 2009 pandemic (H1N1) vaccine in Hong Kong: a
789 longitudinal study. *PLoS One* **6**, e17713 (2011).
- 790 117. Chan, M. S. et al. Legacy and social media respectively influence risk perceptions and
791 protective behaviors during emerging health threats: a multi-wave analysis of communications
792 on Zika virus cases. *Soc. Sci. Med.* **212**, 50–59 (2018).
- 793 118. Lieberoth, A., Čepulić, D.-B., Rasmussen, J. COVIDiSTRESS global survey. Preprint at
794 <https://osf.io/z39us/> (2020).
- 795 119. Service, O. et al. EAST Four Simple Ways to Apply Behavioural Insights. (Behavioural
796 Insights Team, 2014).
- 797 120. Hovland, C. I. & Weiss, W. The influence of source credibility on communication
798 effectiveness. *Public Opin. Q.* **15**, 635–650 (1951).
- 799 121. Brinol, P. & Petty, R. E. Source factors in persuasion: a self-validation approach. *Eu.*

- 800 *Rev. Soc. Psychol.* **20**, 49–96 (2009).
- 801 122. Griffin, R. J. & Dunwoody, S. The relation of communication to risk judgment and
802 preventive behavior related to lead in tap water. *Health Commun.* **12**, 81–107 (2000).
- 803 123. Niederdeppe, J. et al. Content and effects of news stories about uncertain cancer causes
804 and preventive behaviors. *Health Commun.* **29**, 332–346 (2014).
- 805 124. King, C. L., Chow, M. Y., Wiley, K. E. & Leask, J. Much ado about flu: a mixed
806 methods study of parental perceptions, trust and information seeking in a pandemic. *Influenza
807 Other Resp.* **12**, 514–521 (2018).
- 808 125. Pan American Health Organization/World Health Organization. *COVID-19 An
809 informative guide. Advice for journalists* (Pan American Health Organization, 2020)
- 810 126. World Health Organization. *Effective Media Communication during Public Health
811 Emergencies. A WHO Handbook* (World Health Organization, 2005).
- 812 127. Mullen, P. D. et al. A meta-analysis of trials evaluating patient education and counseling
813 for three groups of preventive health behaviors. *Patient Educ. Couns.* **32**, 157–173 (1997).
- 814 128. Mesch, G. S. & Schwirian, K. P. Confidence in government and vaccination willingness
815 in the USA. *Health Promot. Int.* **30**, 213–221 (2015).
- 816 129. Hooker, C., King, C. & Leask, J. Journalists' views about reporting avian influenza and a
817 potential pandemic: a qualitative study. *Influenza Other Resp.* **6**, 224–229 (2012).
- 818 130. Kelleher, C. A. & Wolak, J. Priming presidential approval: the conditionality of issue
819 effects. *Political Behav.* **28**, 193–210 (2006).
- 820 131. Kogen, L. & Dilliplane, S. How media portrayals of suffering influence willingness to
821 help: the role of solvability frames. *J. Media Psychol.* **31**, 92–102 (2019).
- 822 132. Staniland, K. & Smith, G. Flu frames. *Sociol. Health Illn.* **35**, 309–324 (2013).
- 823 133. Means, A. R. et al. Evaluating and optimizing the consolidated framework for
824 implementation research (CFIR) for use in low-and middle-income countries: a systematic
825 review. *Implement. Sci.* **15**, 1–19 (2020).
- 826 134. Dutta, M. J. Culture-centered approach in addressing health disparities: communication
827 infrastructures for subaltern voices. *Commun. Methods Meas.* **12**, 239–259 (2018).
- 828 135. Napier, D. et al. *Culture Matters: Using a Cultural Contexts of Health Approach to
829 Enhance Policy-Making*. (World Health Organization Regional Office for Europe, 2017).
- 830 136. Camerer, C. F. et al. Evaluating replicability of laboratory experiments in economics.
831 *Science* **351**, 1433–1436 (2016).
- 832 137. Ioannidis, J. P. A. Why most published research findings are false. *PLoS Med.* **2**, e124
833 (2005).
- 834 138. Henrich, J., Heine, S. J. & Norenzayan, A. The weirdest people in the world? *Behav.
835 Brain Sci.* **33**, 61–83 (2010).
- 836 139. Klein, R. A. et al. Many Labs 2: investigating variation in replicability across samples
837 and settings. *Adv. Methods Pract. Psychol. Sci.* **1**, 443–490 (2018).
- 838 140. Betsch, C. How behavioural science data helps mitigate the COVID-19 crisis. *Nat. Hum.
839 Behav.* <https://doi.org/10.1038/s41562-020-0866-1> (2020).
- 840 141. WHO Regional Office For Europe. COVID-19 Snapshot MOntoring (COSMO
841 Standard): monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the
842 current coronavirus outbreak - WHO standard protocol.
843 <https://doi.org/10.23668/PSYCHARCHIVES.2782> (2020).
- 844 142. Privy Council Office Of Canada. Canada COVID-19 Snapshot MOntoring (COSMO
845 Canada): monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the

846 current coronavirus outbreak in Canada. <http://dx.doi.org/10.23668/psycharchives.2868> (2020).
847 143. Saletti-Cuesta, L., Berra, S., Tumas, N., Johnson, C. & Carbonetti, A. Argentina COVID-
848 19 Snapshot MOnitoring (COSMO Argentina): monitoring knowledge, risk perceptions,
849 preventive behaviours, and public trust in the current coronavirus outbreak in Argentina.
850 <http://dx.doi.org/10.23668/psycharchives.2788> (2020).
851 144. Böhm, R., Lilleholt, L., Zettler, I. & COSMO Denmark Group. Denmark COVID-19
852 Snapshot MOnitoring (COSMO Denmark): monitoring knowledge, risk perceptions, preventive
853 behaviours, and public trust in the current coronavirus outbreak in Denmark.
854 <http://dx.doi.org/10.23668/psycharchives.2795> (2020).
855 145. Abera, N., Alemayehu, A., Belayneh, F. & Jember, D. Ethiopia COVID-19 Snapshot
856 MOnitoring (COSMO Ethiopia): monitoring knowledge, risk perceptions, preventive behaviours,
857 and public trust in the current coronavirus outbreak in Ethiopia.
858 <http://dx.doi.org/10.23668/psycharchives.2877> (2020).
859 146. Aharonson-Daniel, L., Davidovitch, N., Fuchs, G., Dopelt, K. & Shibli, H. Israel
860 COVID-19 Snapshot MOnitoring (COSMO Israel): monitoring knowledge, risk perceptions,
861 preventive behaviours, and public trust in the current coronavirus outbreak in Israel.
862 <http://dx.doi.org/10.23668/psycharchives.2866> (2020).
863 147. Alamro, N. et al. Saudi Arabia COVID-19 Snapshot MOnitoring (COSMO Saudi):
864 monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the current
865 coronavirus outbreak in Saudi Arabia. <http://dx.doi.org/10.23668/psycharchives.2878> (2020).
866 148. Hadi, T. A. & Fleshler, K. Integrating social media monitoring into public health
867 emergency response operations. *Disaster Med. Public* **10**, 775–780 (2016).
868 149. Lischetzke, T. Daily Diary Methodology. in *Encyclopedia of Quality of Life and Well-
869 Being Research* (ed. Michalos, A. C.) 1413–1419 (Springer Netherlands, 2014).
870 150. Ferretti, L. et al. Quantifying SARS-CoV-2 transmission suggests epidemic control with
871 digital contact tracing. *Science* **368**, eabb6936 (2020).
872 151. Wang, C. J., Ng, C. Y. & Brook, R. H. Response to COVID-19 in Taiwan: big data
873 analytics, new technology, and proactive testing. *JAMA* **323**, 1341 (2020).
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875 **Competing interests**

876 The authors declare no competing interests.

